## Efficacy and Hazards of Selective Weedkillers

OF ALL THE ways in which the scientist has helped the farmer to achieve greater productivity, none has been more successful than the development of modern methods of chemical weed central.

The chief problem-and greatest success—has been in finding selective herbi-cides that kill the weeds but leave the crop unharmed. There are now weed-killers that selectively destroy weed By EDGAR PHILLIPS

grasses growing in cereals, both of which are in the same botanical order, Gram-inae, and therefore have a similar

growing habit.

As with most new farming techniques herbicides have created their own problems. Their consistent use over the years lems. I heir consistent use over the years has led to changes in the weed popula-tion, species that are resistant to the chemical used becoming dominant. Spe-cific weed problems have also been caused by the longer growing season of cereals and their more frequent use in the rotation.

the rotation.

Fortunately, progress has been so rapid that the farmer is able to counterattack with mixtures of chemicals that control a wider range of weeds, and herbicides designed to kill one or two specific weeds that have become particularly dominant.

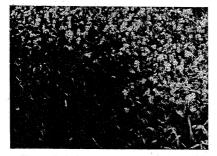
Usually the timing of the application of weedkillers is critical. In the control of wild oats in cereals, for example, Carbyne must be sprayed when the weed has one to two-and-a-half leaves. Last autumn up to 100 per cent control was

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able. This chemical kills a wide range of plants and has the advantage, unlike most total weedkillers, of quickly breaking down so that another crop can be sown soon after application. The usual procedure with old pasture treated in this way is to rotavate the dead herbage, apply fertilizer and reseed, or to reseed the vegetative mat direct using a sod-seeder, which is similar to a combine drill.

Generally speaking, fruit growers have Generally speaking, fruit growers have been slower than arable farmers to adopt chemical weed control. Since fruit crops are mostly perennjal and represent a fairly high capital investment the risk of damage from herbicides is greater than in arable crops. But now that experience is being gained and the opera-tion made safer this objection is no

There are some row crops, such as sugar beet and potatoes, that still have sugar beet and potatoes, that still have to be cultivated to destroy weeds, but residual herbicides are being developed, in the same group as Simazine, that could well eliminate much of the machine and hand hoeing done at present. One can safely predict that soon there will



oats in the foreground were sprayed with Bexone 35 days before being photographed. Those in the background were unsprayed.

trol has become impracticable and un-economic. The weed is able to grow in the autumn and so seriously compete

the auttimn and so seriously compete with the crop.

Field trials have shown that 70 to 80 per cent control can be achieved by spraying up to the middle of January after the blackgrass has developed two leaves. Increases of up to 50 per cent have been recorded where most of the weed has been killed.

One of the most important advances in chemical weed control has been the introduction of Simazine and allied com-pounds. Simazine has proved especially valuable as a pre-emergence herbicide in soft fruit and in majze. A similar chemical, Semeron, recently announced, is claimed to control weeds in kale when applied as a post-emergence spray when the crop has reached the three leaf stage.

achieved with the chemical under commercial conditions, and results were satisfactory on 99 per cent of the nearly 80,000 acres of cereals sprayed.

The use of the new chemicals has, however, brought a new heazard into control blackgrass in autumn-sown cereals where the weed has become dominant, especially on heavier land, because the traditional method of complete the special proper impracticable and under the days every five the statement of the days every five the statement of the statement some of the total weedkillers because of the danger of damage to crops through drift. Paraquat, for instance, cannot distinguish a crop from a weed and will

distinguish a crop from a weed and will destroy any green matter on contact. That is why all farmers will be watching with interest the progress of the recently introduced vibro-boom spraying mechanism which, it is claimed, completely eliminates drift. (Picture on page 2.) Working on the principle of a reciprocating boom, the new type of spray bar does away with the ordinary spray nozzles. Holes drilled in the boom send out droplets too large to be carried on the wind. The reciprocating action breaks up the stream of spray from each nozzle finely enough to give an adequate coverage of the ground. Already the principle has been applied to machines working in blackcurrants, hops, strawberries, onions and bulbs.

One of the features of the demonstration area at the new showground of the

the crop has reached the three leaf stage.

These herbicides have been devised to reduce weed competition in a grow-ing crop, but this autumn a chemical was introduced for a different purpose—the destruction of all vegetation to which it is applied. Gramoxone, based on paraquat, was designed to improve grassland that is inaccessible to the plough or where ploughing is inadvis-



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